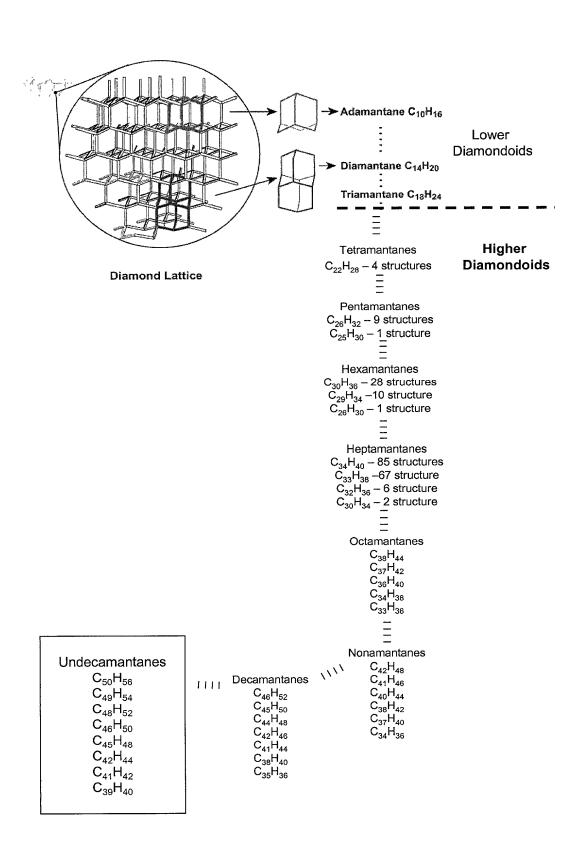
TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS

COMPRISING SUCH DIAMONDOIDS INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON SHEET 1 of 24 **APPLICATION SERIAL NO: HEREWITH**

FIG. 1



TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON SHEET 2 of 24 **APPLICATION SERIAL NO: HEREWITH**

FIG. 2

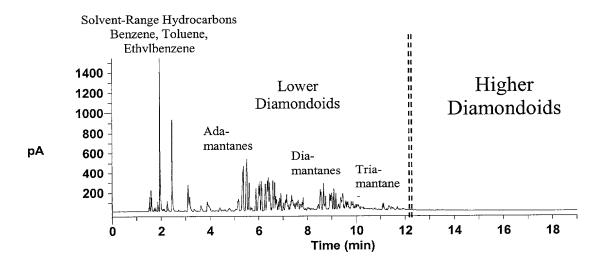
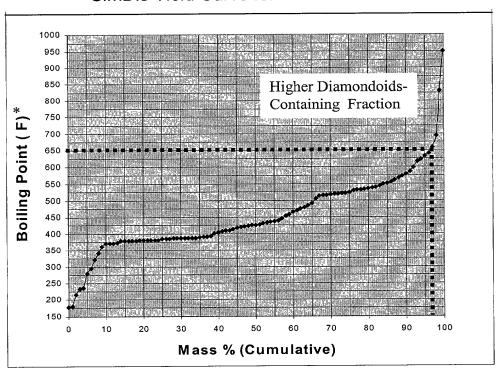


FIG. 3 SimDis Yield Curve for Feedstock B



^{*} Atmospheric-Equivalent

TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS

COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON APPLICATION SERIAL NO: HEREWITH SHEET 3 of 24

FIG. 4

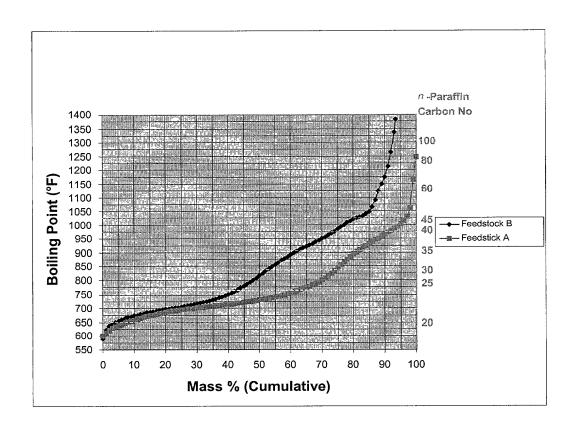
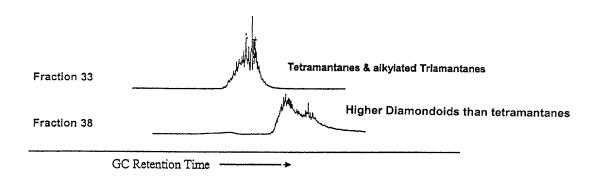


FIG. 5



TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

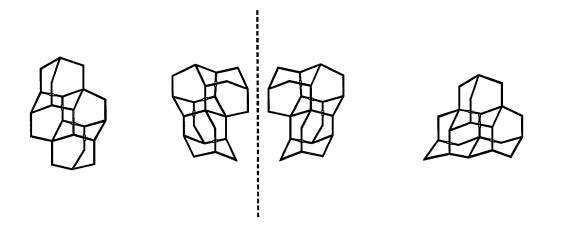
INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON **APPLICATION SERIAL NO: HEREWITH** SHEET 4 of 24

FIG. 6 1 First Column Fraction 33 Intensity 10 12 Second Intensity Column 19.0 18.0 21.0 20.0

FIG. 7

GC Retention Time (min.)

mirror plane



[121] Tetramantane

[123] Tetramantane (ENANTIOMERS)

[1(2)3] Tetramantane

TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON **APPLICATION SERIAL NO: HEREWITH** SHEET 5 of 24

FIG. 8A

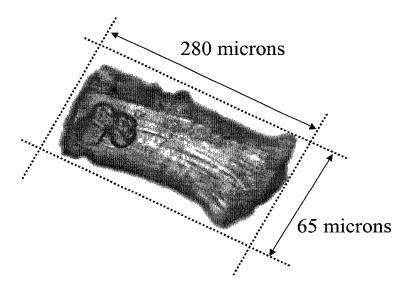


FIG. 8B

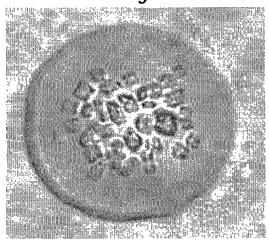
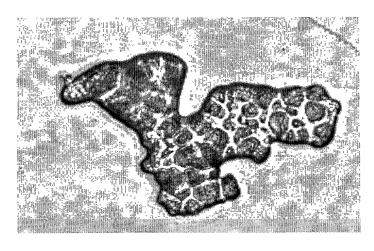


FIG. 8C



TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS

COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON APPLICATION SERIAL NO: HEREWITH SHEET 6 of 24



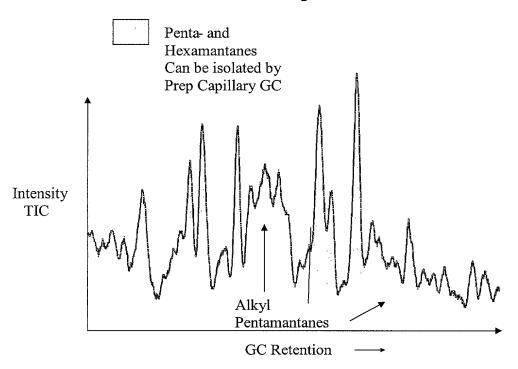
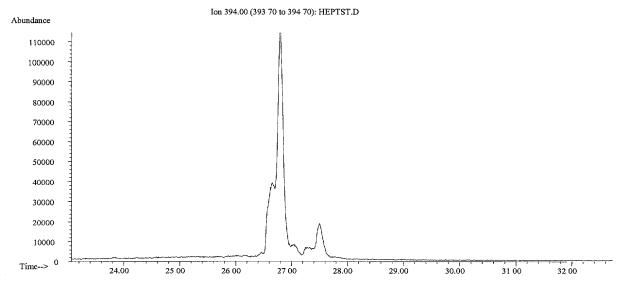


FIG. 10

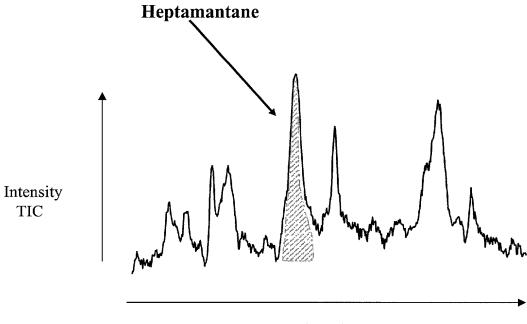


Time (min)

TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

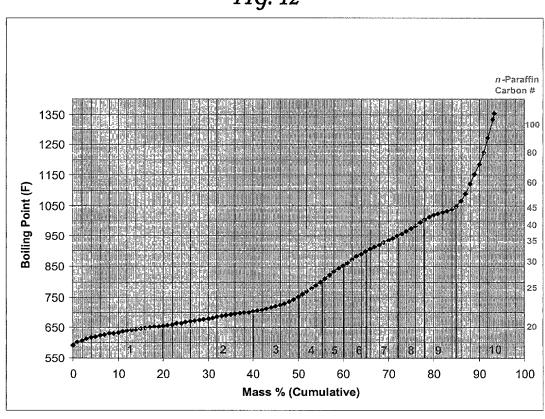
INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON
APPLICATION SERIAL NO: HEREWITH SHEET 7 of 24

FIG. 11



GC Retention Time

FIG. 12



 ${f TITLE:}$ Processes for the Purification of Higher Diamondoids and Compositions Comprising Such Diamondoids

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON **APPLICATION SERIAL NO: HEREWITH** SHEET 8 of 24

FIG. 13

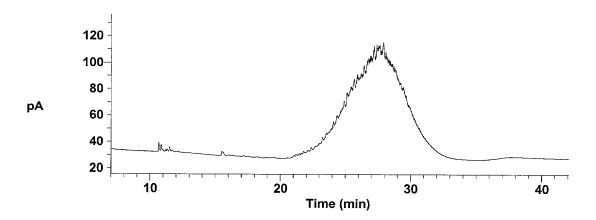
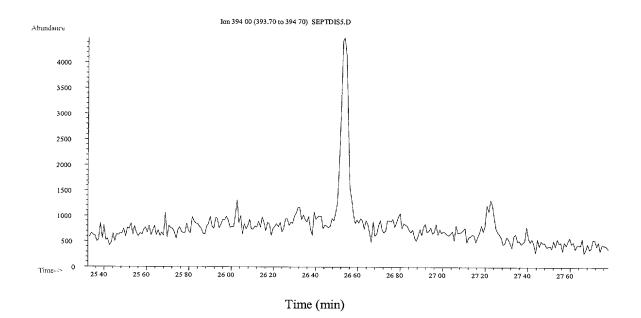


FIG. 14



APPLN. FILING DATE: DECEMBER 12, 2001

TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON APPLICATION SERIAL NO: HEREWITH SHEET 9 of **SHEET 9 of 24**

FIG. 15

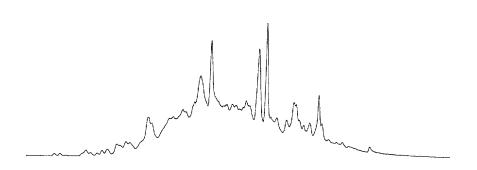
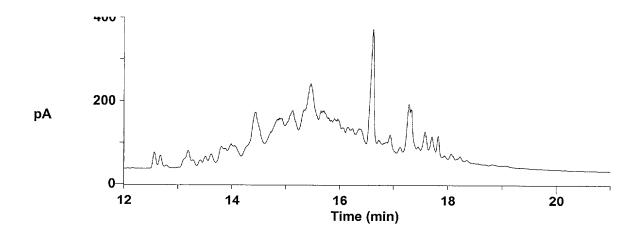


FIG. 16



 $\boldsymbol{TITLE:}\;\;Processes$ for the Purification of Higher Diamondoids and Compositions Comprising Such Diamondoids

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON **APPLICATION SERIAL NO: HEREWITH SHEET 10 of 24**

FIG. 17

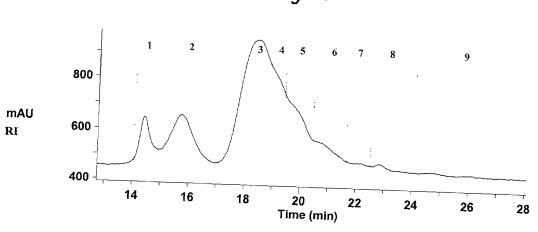
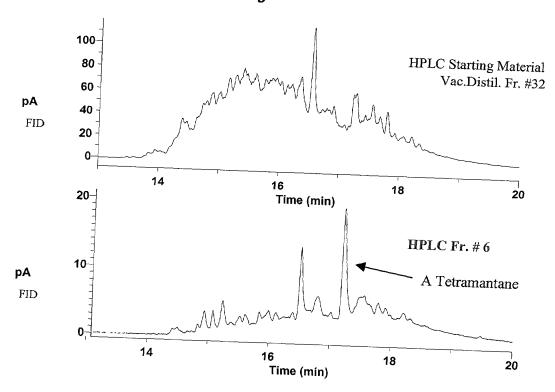


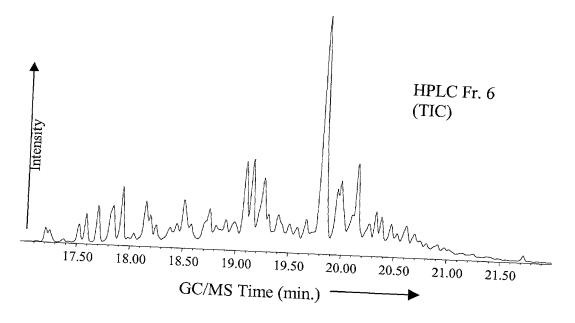
FIG. 18

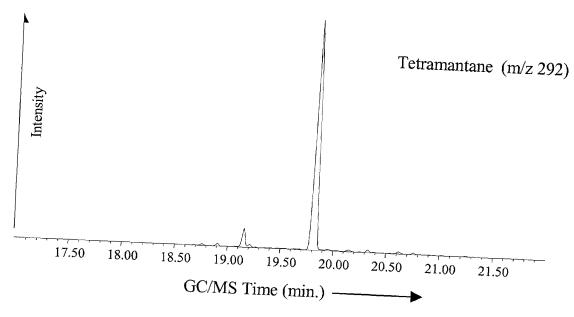


TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON **APPLICATION SERIAL NO: HEREWITH SHEET 11 of 24**





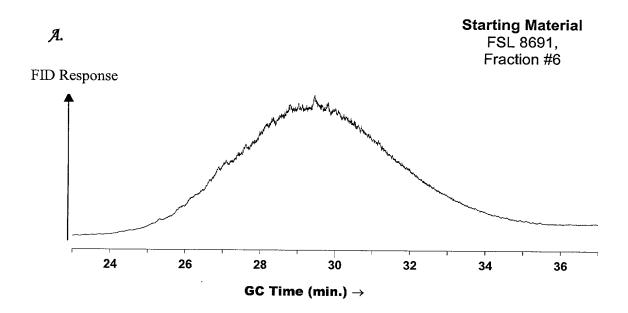


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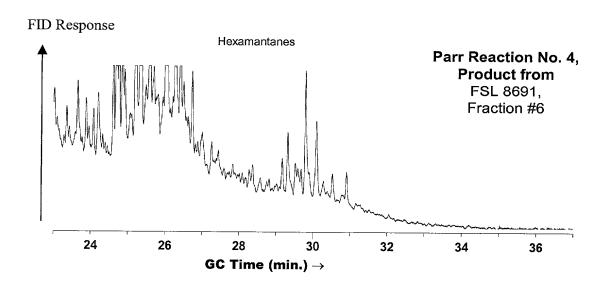
TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON **APPLICATION SERIAL NO: HEREWITH SHEET 12 of 24**

FIG. 20



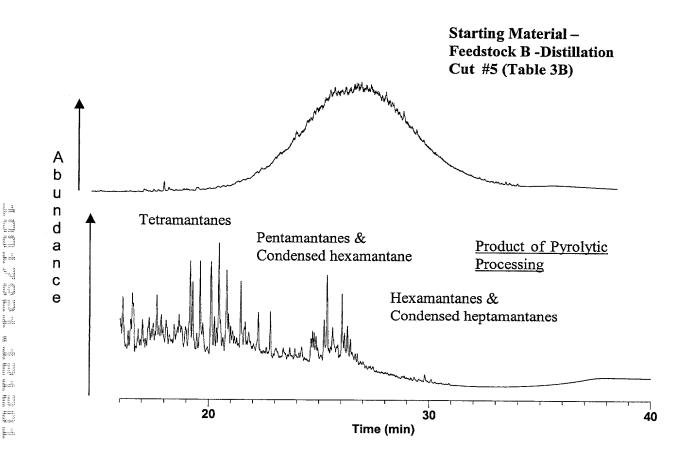
B.



TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON **APPLICATION SERIAL NO: HEREWITH SHEET 13 of 24**

FIG. 21



TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON APPLICATION SERIAL NO: HEREWITH SHEET 14 of 2 **SHEET 14 of 24**

FIG. 22

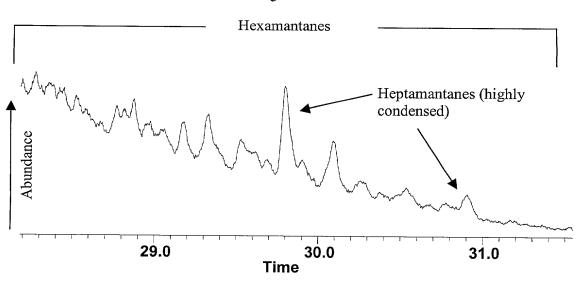
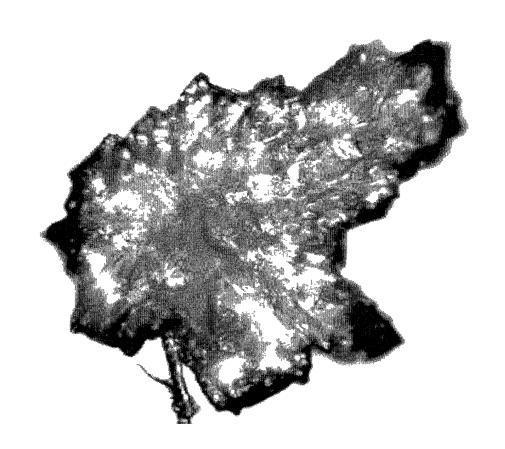


FIG. 23

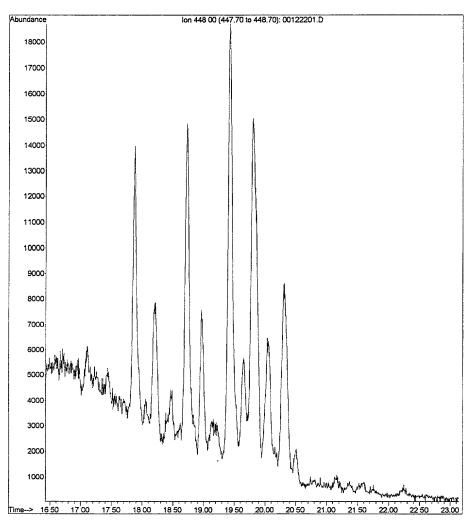


APPLN. FILING DATE:

 $\pmb{\text{TITLE:}}$ Processes for the Purification of Higher Diamondoids and Compositions Comprising Such Diamondoids

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON APPLICATION SERIAL NO: HEREWITH SHEET 15 of 24

FIG. 24

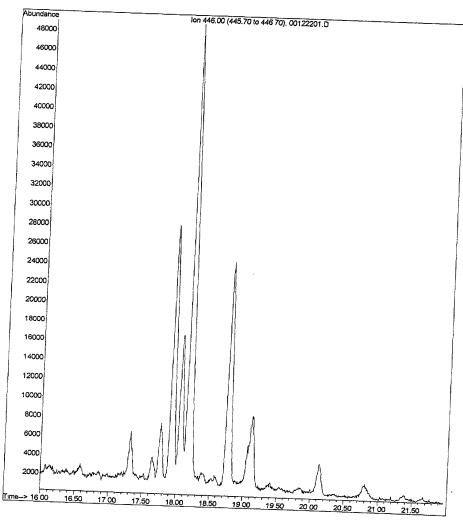


Time (min)

TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON **APPLICATION SERIAL NO: HEREWITH** SHEET 16 of 24

FIG. 25



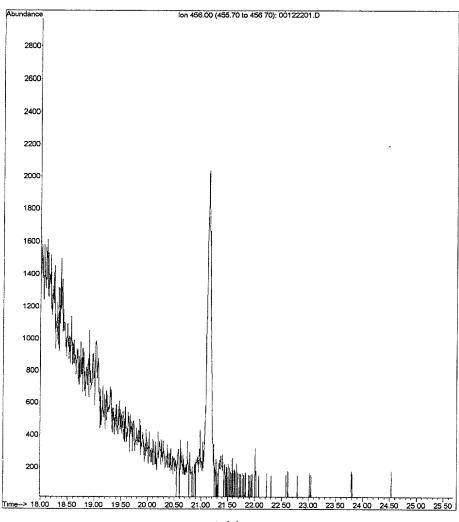
Time (min)

 $\boldsymbol{TITLE:}\;$ Processes for the Purification of Higher Diamondoids and Compositions Comprising Such Diamondoids

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON

APPLICATION SERIAL NO: HEREWITH SHEET 17 of 24

FIG. 26

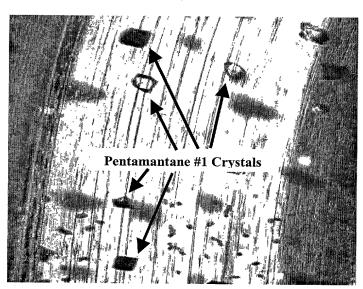


Time (min)

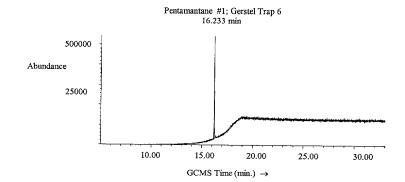
INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON APPLICATION SERIAL NO: HEREWITH **SHEET 18 of 24**

FIG. 27

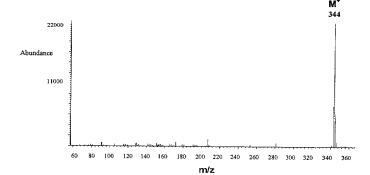
A.



B.



C.

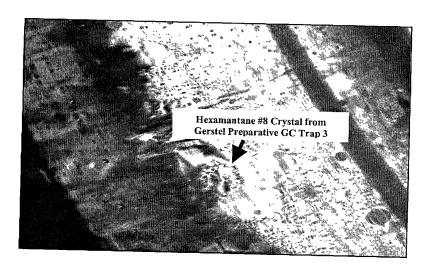


 $\pmb{TITLE:}$ Processes for the Purification of Higher Diamondoids and Compositions Comprising Such Diamondoids

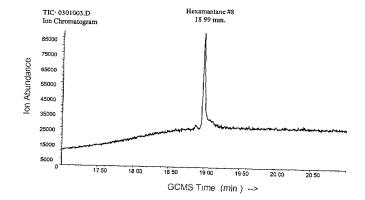
INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON **APPLICATION SERIAL NO: HEREWITH SHEET 19 of 24**

FIG. 28

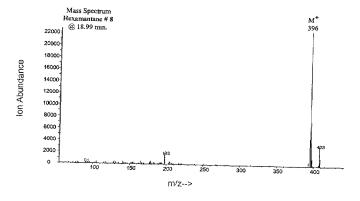
A.



B.

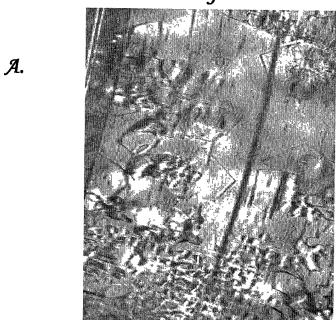


C.

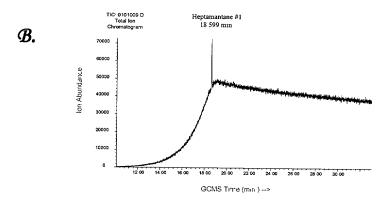


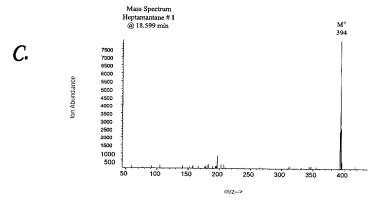
SHEET 20 of 24 APPLICATION SERIAL NO: HEREWITH

FIG. 29



Heptamantane #1 Crystals





TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON APPLICATION SERIAL NO: HEREWITH SHEET 21 of 24

Number of Diamond Crystal Cage Units	Number of Molecular Formulae	Higher Diamondoid		Molecul	Molecular Weights	ţ				
4	-	Tetramantane	292							
2	7	Pentamantane	344	330						
9	ო	Hexamantane	396	382	342					
7	4	Heptamantane	448	434	394	420				
∞	S.	Octamantane	500	486	446	420	432			
တ	9	Nonamantane	552	538	498	524	484	444		
10	7	Decamantane	604	290	250	929	536	496	456	
7	80	Undecamantane	656	642	602	628	288	548	508	534

TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON APPLICATION SERIAL NO: HEREWITH SHEET 22 of 2 **SHEET 22 of 24**

			Distillati	on Cuts	Made on	Atmospi	heric Re	Distillation Cuts Made on Atmospheric Resid of Feedstock B (°F)	dstock B	(P)
;	601-656	656-702	702-752	752-800	800-852	852-900	900-950	950-976	976-1000	1000-1028
Higher Diamondoid	Fr.1	Fr.2	Fr.3	Fr.4	Fr.5	Fr.6	Fr.7	Fr. 8	F. 9	Fr.2 Fr.3 Fr.4 Fr.5 Fr.6 Fr.7 Fr.8 Fr.9 Fr.10
Tetramantanes										
Pentamantanes										
Cyclohexamantanes										
Hexamantanes										
Heptamantanes										
Octamantanes						127				
Nonamantanes										
Decamantanes										
Undecamantanes										

 ${f TITLE:}$ Processes for the Purification of Higher Diamondoids and Compositions

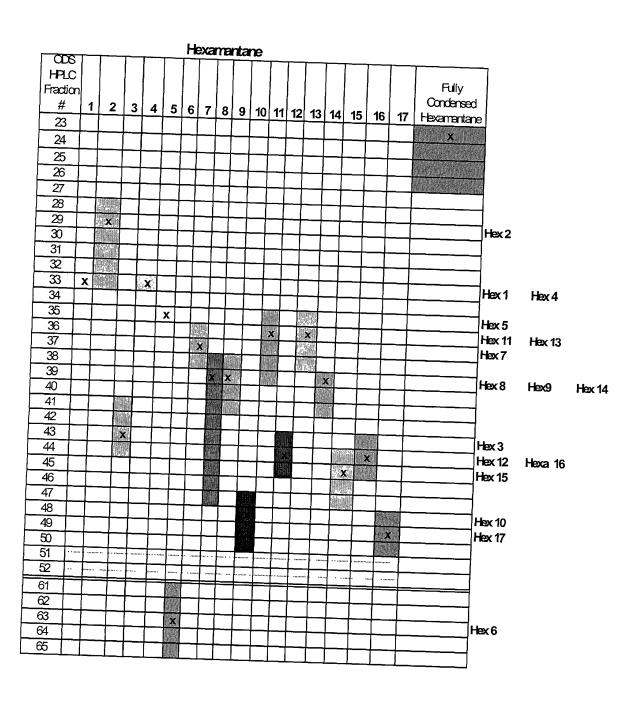
Comprising Such Diamondoids

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON

APPLICATION SERIAL NO: HEREWITH

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FIG. 32



TITLE: PROCESSES FOR THE PURIFICATION OF HIGHER DIAMONDOIDS AND COMPOSITIONS COMPRISING SUCH DIAMONDOIDS

INVENTOR(S): JEREMY E. DAHL AND ROBERT M. CARLSON APPLICATION SERIAL NO: HEREWITH **SHEET 24 of 24**

FIG. 33

